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Climate Equity and Child Health: Unpacking Environmental Disparities

Abstract

Climate change affects every child's health, but not equally. Children in low-wealth communities, children of color, and children with chronic illnesses often face more pollution, more heat, and fewer resources to recover from disasters, largely because of a history of systemic racism and policies like redlining. This lesson, based on a Harvard Chan C-CHANGE guide, explores these disparities and the climate solutions that can reduce them.

Introduction

Imagine two children in the same city. One lives on a quiet, tree-lined street with an air-conditioned school. The other lives next to a highway, in a neighborhood with few trees, and attends a school near a power plant. On a hot, smoggy day, their health risks are very different. These differences are not accidents. Policies like redlining, which denied loans in neighborhoods of color, pushed many communities to live near highways, power plants, and industrial sites. Today, climate change is intensifying the burdens these communities already carry, from air pollution and extreme heat to disasters and unsafe water.

How Do Scientists Study This?

Researchers study climate equity by comparing environmental exposures and health outcomes across groups. They map where pollution sources, such as highways and oil and gas facilities, are located relative to where different communities live. They compare asthma emergency visits and hospitalizations among groups of children. They analyze temperature and tree cover across neighborhoods to identify urban heat islands. They examine how disasters like Hurricanes Katrina and Laura affected residents with different resources. And they use climate projections to estimate how future extreme heat will be distributed, for example comparing counties with larger and smaller African American populations.

How inequity shapes climate health

1

Past policies

Redlining and racist planning

2

Unequal places

Near highways, few trees

3

More exposure

Pollution, heat, and floods

4

Health gaps

More asthma, slower recovery

Map exposures

Compare where pollution sources, heat, and flood risk are concentrated.

Compare outcomes

Look at differences in asthma visits, heat illness, and disaster recovery among groups.

Trace root causes

Connect disparities to history, such as redlining and systemic racism.

What Did They Discover?

Air pollution from fossil fuels causes about 1 in 5 deaths worldwide and 1 in 10 in the U.S. Because of redlining and racist planning, African Americans are 75% more likely to live near high-pollution areas such as oil and gas facilities, and African American children and children in low-wealth urban areas are more likely to visit emergency departments for asthma. Low-wealth neighborhoods tend to have fewer trees, making them hotter. By 2050, counties with large African American populations may experience about 20 more extreme heat days per year than others. After disasters, families without cars, insurance, or savings struggle most: three weeks after Hurricane Laura, many residents still lacked electricity and safe water.

Climate disparities by the numbers

75%

more likely: African Americans living near high pollution

~20

more extreme heat days per year by 2050 in some counties

1 in 10

U.S. deaths linked to fossil fuel air pollution

Removing fossil fuels from transportation, such as converting diesel buses to electric, can greatly reduce the pollution driving asthma disparities.

Takeaways

Unequal exposure

History and policy put some children closer to pollution and heat.

Unequal recovery

Families with fewer resources face greater harm after disasters.

Targeted solutions

Electric buses, green space, and cooling centers can close health gaps.

Key Terms

Health equity

The goal that every person has a fair chance to be as healthy as possible.

Redlining

A historical practice of denying loans and investment in neighborhoods of color, shaping where communities live today.

Urban heat island

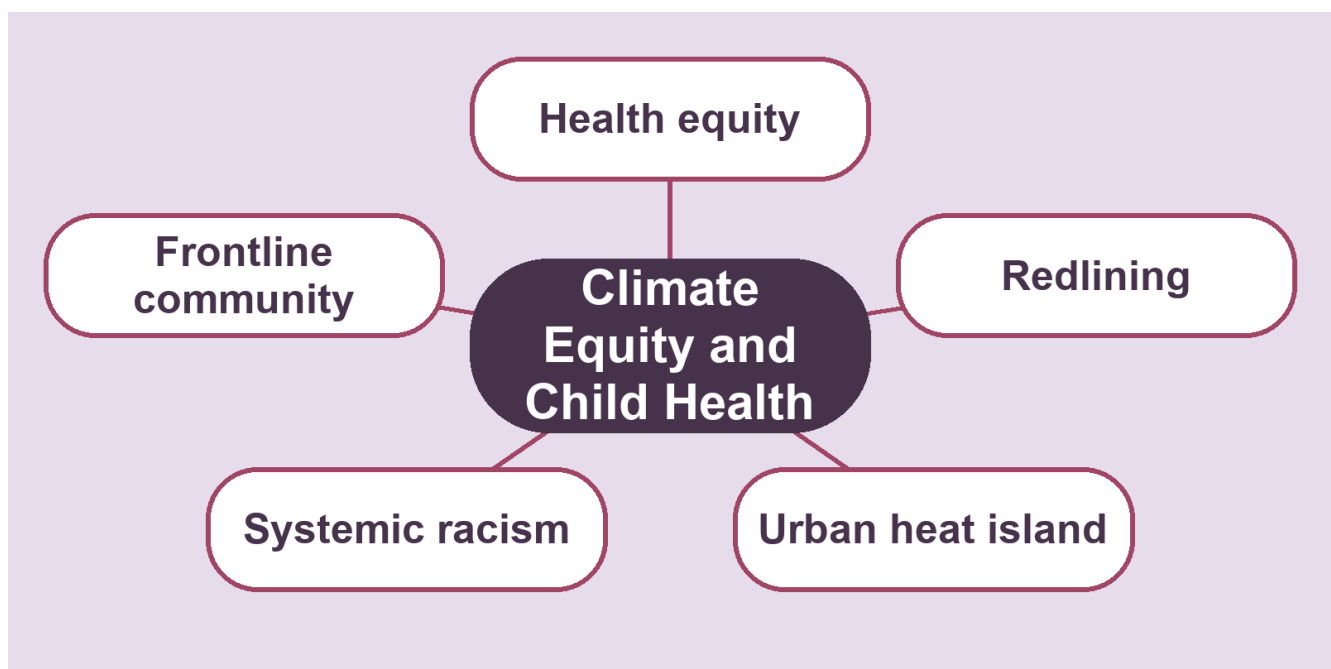
An area in a city that is hotter than its surroundings because of pavement, buildings, and few trees.

Systemic racism

Policies and practices built into institutions that create unequal outcomes for people of color.

Frontline community

A community that experiences the first and worst effects of pollution and climate change.



Activity

Two Neighborhoods, One City

Students compare two neighborhoods' climate risks and design an equity-focused climate plan.

Materials: Neighborhood profile cards A and B (tree cover, distance to highways, school cooling, car ownership); Planning worksheet; Colored markers

1. Read both profiles and list each neighborhood's exposures to pollution, heat, and flooding.
2. Predict which children would face higher health risks and explain using evidence from the lesson.
3. Connect at least one difference to history, such as redlining.
4. Design two climate actions for the higher-risk neighborhood, such as electric buses or more trees.
5. Explain how your plan would improve health equity across the whole city.

References

Harvard T.H. Chan School of Public Health, C-CHANGE. Climate, Kids, and Health: Equity.
<https://hsph.harvard.edu/research/climate-health-c-change/climate-kids-and-health/equity/>